Developing a web application to improve communication at a software company.

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Research methodology for the Dissertation submitted in partial fulfillment of the requirements for the degree *Bsc in Information Technology Hons* at the Vaal Campus of the North-West University

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LIST OF ABBREVIATIONS

EU   European Union (Abbreviation)

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Chapter 6: Conclusion

1. Introduction

The goal of this study is to develop a web application that can be used to enhance communication between developers and management at a South African software development company.

This chapter will focus on giving a summary of the study in Section 2, followed by limitations and future research in Section 3. Section 4 follows with a conclusion of the study.

2. Summary of the study

This study consisted of six chapters. Each of the chapters discussed the following:

Chapter 1 – Effective communication is essential for a business since it enhances engagement between employees and strengthens relationships with clients (Zambas, 2019). The overall efficiency in the work environment improves because of effective communication (EasyWorkNet, 2019). This Chapter was an introduction to the study and highlighted key concepts of the study. The primary and secondary objectives was also discussed in detail.

Chapter 2 – This chapter focused on the research methodologies. The founding's was that design science research was the most suitable research methodology to achieve the aims and objectives of this study through the creation of an artefact. The chapter also explained the research process as well as the design science research framework.

Chapter 3 – This chapter focused on the literature review of the study. An evaluation to improve the communication using different communication methods and user interface design in a software development environment was done. Research on different communication methods was also done to understand the advantages and disadvantage of each communication method. Research on human-computer interaction was done to guide with the understanding of what the difference between a good and a

bad system is, thus giving background on designing the artefact, and using past research on user experience.

Chapter 4 – This chapter discussed the analysis and data gathering of the study. The chapter gave background of the participant as well as discussed feedback from the interview that was held. An analysis of the feedback was done with the use of open coding. The chapter ended with a list of requirements and specifications, as it formed part of the suggestion phase while developing the artefact.

Chapter 5 – This chapter focused on designing and developing the artefact. The artefact was designed according to the requirements and specifications from the data gathered in the suggestion phase. The human-computer interaction rules formed part of the requirement "user experience comes first".

Chapter 6 – This chapter focuses on the conclusion of the study and gives a summary of each chapter. Limitations and future research are also discussed as well as a formal conclusion of the study.

3. Objectives and how it was achieved

3.1. Primary objective

To develop a web application for a South African software development company that allows for easy access to important communication relating to specific projects. This objective was achieved by following the Vijay Vaishnavi (2004) process model and developing an artefact according to a set of requirements and specifications. By using the Vijay Vaishnavi (2004) process model it aided in establishing the design as a coherent discipline and aid in flow of phases in the artefact.

3.2. Secondary objectives

(i) Theoretical objectives

- Gain knowledge of design science research to guide the development of an artefact. This objective was achieved in Chapter 2 of the research paper where the focus was on the different research methodologies and what the most suitable research methodology was.

- To identify commonly used communication methods in the industry. This objective was achieved in Chapter 3 where research was done on different communication methods to understand the advantages and disadvantage of each communication method.

(ii) Empirical objectives

- To collect and analyse qualitative data in the form of an interview in order to understand what people in the software development industry need to make communication easier. This objective was achieved in Chapter 4 where an interview was held to establish requirements and specifications of the artefact. This greatly improved the artefact and gave a guidance to the development phase.
- To develop a communication web application that will provide easy access to desired communication. This objective as achieved in Chapter 5 where an artefact was developed according to the requirements and specifications from the suggestion phase of the Vijay Vaishnavi (2004) process model.

3. Limitations and future research

The nature of and scope of the research paper is limited and forms part of an NWU Honours project. Some aspects were excluded from the study and can be improved on in a further study.

- More participants in the suggestion phase of the study, thus improving the artefact as well as give more insight into designing and further improving the communication between employees.

- Having a wider scope would allow for more requirements and specifications, thus providing more features added to the artefact.

- Using more than one data gathering technique during different stages of the study would have been beneficial to improving the artefact at various stages. Seen as the only data gathering technique used was a semi-structured interview.

4. Conclusion

In the software development industry, communication remains a vital component of the core business. A typical process followed in the software development industry entails a client communicating requirements to a project manager and, the project manager

communicating the requirements to the developers. When those requirements are poorly communicated, it can affect the quality of the end product, waste time, resources and that translates to money being lost (EasyWorkNet, 2019). Thus, it is important for all the key stakeholders to have a good communication system.

The goal of this study is to develop a web application that can be used to enhance communication between developers and management at a South African software development company. The system will allow project software developers to have access to important information with ease. Theoretical concepts that are applicable to this study were: design science research, building an artefact, productivity, communication, and agile software development.

Design science research was the most suitable research methodology to achieve the aims and objectives of this study through the creation of an artefact. The process model used in the study was the Vijay Vaishnavi (2004) process model. The process model established the design as a coherent discipline and aided in establishing in what phase the project was at any given time (Mohammad Abooyee Ardakan, 2009). The process model focused on the performance and development of artefacts, intending to improve an already functional artefact.

An evaluation to improve the communication using different communication methods and user interface design in a software development environment was done to gain knowledge on possible solutions to be added to the artefact. Ten human-computer interaction rules were identified and followed while developing and designing the artefact.

Feedback was gathered with the use of a semi-structured interview and analysed with the use of open coding. The data analysis resulted in five requirements and specifications, namely: improve communication, improve productivity, the artefact should focus on communication between employees and communication about the project, create a relaxed environment and the user experience comes first. The human-computer interaction rules formed part of the requirement "user experience comes first".

The goal of the study was achieved by presenting a web-application meeting all the requirements and specifications. The artefact can be used to enhance communication between developers and management at a South African software development company.

5. Reference List

EasyWorkNet. (2019, 27 December). *The Importance of Communication in Software Development Teams*. https://www.easyworknet.com/web-development/importance-communication-software-development-teams/#:~:text=When%20it%20comes%20to%20software%20development%2C%20communication%20is,the%20solution%20to%20the%20client%20in%20good%20time.

Mohammad Abooyee Ardakan, K. M. (2009). Applying Design Research Method to IT Performance Management: Forming a New Solution. https://scialert.net/fulltext/?doi=jas.2009.1227.1237

Vijay Vaishnavi, B. K., and Stacie Petter. (2004). DESIGN SCIENCE RESEARCH IN INFORMATION SYSTEMS. 62. http://desrist.org/design-research-in-information-systems/

Zambas, J. (2019, 5 February). *The Importance of Effective Communication in the Workplace*. https://www.careeraddict.com/the-importance-of-effective-communication-in-the-workplace#:~:text=Effective%20communication%20in%20the%20workplace%20is%20an%20integral,effectively%2C%20the%20results%20are%20detrimental%20to%20the%20business.